

Veg. management
and wildfires

Service Portal
anniversary

Top 10
stories

Carbon monoxide
safety

• CLOSED • Circuit

WESTERN AREA POWER ADMINISTRATION

DECEMBER 2020



**Powering
through
adversity**



CLOSED Circuit

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Contents

ESF-12 mobilizes after Hurricane Laura	1
<i>WAPA employee puts his expertise into practice during relief efforts.</i>	
Vegetation management protects lines	4
<i>In a record-breaking season, vegetation management kept lines safe.</i>	
IT Service Portal celebrates one year	8
<i>The portal caps off a year of improvement to IT service delivery.</i>	
Wood pole structures: the backbones of WAPA	10
<i>WAPA has around 68,000 wood pole structures supporting its lines.</i>	
2020's final AEM spotlights accomplishments	11
<i>The All-Employee Meeting was held Oct. 27, broadcast to employees across WAPA's footprint.</i>	
WAPA reports Q4 results	12
<i>How is WAPA doing? This performance summary answers the question.</i>	
Top 10 stories of 2020	14
<i>At the end of every year, Closed Circuit takes a moment to reflect.</i>	
Stay safe from carbon monoxide	16
<i>Keep warm, but don't forget about the hazards of carbon monoxide.</i>	
Brief Transmissions	18

On the cover

*In September, Director of Transmission and Construction **Will Schnyer** deployed to Louisiana to work with Jefferson Davis Electric Cooperative on damage assessment in the wake of Hurricane Laura. This collapsed steel lattice tower was only one example of the toll the storm took on the transmission and distribution system. Read the full story on Page 1.
(Photo by Jeff Williams)*



ESF-12 mobilizes after Hurricane Laura

By Leah Wilson

Photos by Will Schnyer



n Aug. 27, Hurricane Laura, approaching maximum force, made landfall near Cameron, Louisiana. The storm did considerable damage to the electric transmission and distribution system serving southeast Texas and southwest Louisiana.

continued on Page 2



The state of Louisiana is divided into 64 parishes. In the wake of Hurricane Laura, Cameron Parish had the largest number of power outages, with many transmission lines broken and uprooted.



Director of Transmission and Construction Will Schnyer assisted Jefferson Davis Electric Cooperative staff and Royal Engineering representatives to gain a better understanding of infrastructure damage and challenges to restoration. Many wooden power poles, steel lattice structures, substation transformers and other equipment were damaged beyond repair. (Photo by Jeff Williams)

The storm caused more than 613,000 customer outages across Louisiana, resulting in the need for support. While power restoration was possible for many areas, southwest Louisiana suffered significant damage to transmission and distribution infrastructure.

The state of Louisiana is divided into 64 parishes, unlike most other U.S. states, which are separated into counties. Calcasieu and Cameron parishes were the most critical to restore, with Cameron Parish having the largest number of power outages.

Hurricane's wake

In response to Laura, the Federal Emergency Management Agency mobilized federal response teams to support Louisiana, Texas and Arkansas, including Emergency Support Function #12.

On Sept. 14, Director of Transmission and Construction **Will Schnyer**—who has ESF #12 experience—was asked by the Department of Energy to provide FEMA and Jefferson Davis Electric Cooperative with a basic analysis of restoration options. By Sept. 18, he was on the scene.

"Lower Cameron Parish, which borders the Gulf Coast, was completely

devastated," he said. "I've worked various types of disasters throughout my career, but the Lower Cameron Parish damage ranks as some of the worst devastation I've ever witnessed."

Schnyer and two other ESF #12s formed an assessment team, which was tasked by FEMA to assess the damage to JDEC's service territory. The team and JDEC staff worked with Royal Engineering & Consultants—a Louisiana-based engineering and consulting firm—throughout the assessment period.

JDEC is a small electric cooperative serving the rural parishes of Allen, Calcasieu, Cameron, Jefferson Davis and Vermillion. They serve the energy needs of roughly 11,000 residential, commercial and industrial customers.

Not his first rodeo

"My ESF #12 skillset is as a subject-matter expert for transmission and distribution infrastructure," said Schnyer. "I've worked 7,620-volt underground distribution up to 500-kilovolt transmission both as a Florida Power & Light lineman and as a WAPA craftsman."

Throughout his 36-year career, Schnyer has participated in restoration efforts and gained experience

restoring power after natural disasters—such as hurricanes, earthquakes, tornados, ice storms, fires and more—took their toll on electric utility infrastructure.

In 2012, Schnyer was WAPA's onsite incident commander for 92 craft employees who assisted FirstEnergy in New Jersey for around one month in response to Hurricane Sandy rebuild efforts.

He was the onsite incident commander again five years later for 30 craft employees who assisted the U.S. Virgin Islands Water and Power Authority on St. Thomas. WAPA participated in power restoration efforts for roughly two and a half months in the wake of hurricanes Irma and Maria.

Schnyer also deployed as an ESF #12 in 2018, assisting the Commonwealth of the Northern Marianas Islands utilities on Guam, Rota, Tinian and Saipan with power restoration after typhoons struck the areas.

His experience with these similar situations has been helpful.

"Direct personal participation in these types of events provides valuable experience that is always helpful and oftentimes utilized later on," he said.



This Jefferson Davis Electric Cooperative 69-kilovolt substation suffered severe damage from a 15-foot storm surge in the Gulf of Mexico.



Hurricane Laura caused more than 613,000 customer outages across the state. Southwest Louisiana suffered significant damage to transmission and distribution infrastructure.

Getting to work

On Sept. 18-19, the team visited Louisiana's Lake Charles area to conduct damage assessments of transmission and distribution assets. It became very clear that extensive damage impacted JDEC's electrical infrastructure throughout its Lower Cameron Parish service territory.

"Most wooden power poles, steel lattice structures, substation transformers, switchgears and associated hardware and equipment were damaged beyond repair and in need of replacement," Schnyer said.

Hundreds of transmission lines and distribution poles in Lower Cameron Parish were damaged. Schnyer spoke to responders, residents and others when he was performing the damage assessments.

"Mutual-aid responders never forget the experiences they encounter during storm restoration work," he said. "I was in awe at the resilience and daily efforts from the JDEC staff who lived and worked in the hardest-hit area of Louisiana. They were doing the best they could despite enduring hardships to restore normalcy to their lives and to the communities they live in."

On Sept. 21, Tropical Storm Beta made landfall in Texas. The storm

flooded parts of the area and delayed restoration efforts.

Additional site visits continued, with the goal of collecting, evaluating and sharing information on energy system damage and estimating the impact of outages within affected areas for FEMA.

Staying safe

Amidst restoration efforts, the Baton Rouge Joint Field Office area Schnyer was assigned to was very proactive in promoting Centers for Disease Control and Prevention guidelines for social distancing and mask use. Temperatures were taken each morning and mitigating measures to protect all deployed staff were consistently enforced.

On Sept. 28, FEMA released the ESF #12s to return home. They have continued their efforts in a virtual setting.

"It's my observation and opinion that restoration and re-energization efforts will continue for the next several months, primarily in the southwestern part of Louisiana along the Gulf Coast," Schnyer said.

Challenges and appreciation

There are considerable challenges to overcome to fully restore south-

western Louisiana. One of which is the difficulty of accessing and repairing the transmission lines located beneath the intracoastal waterway. Another is supply-chain issues.

"I appreciate the many WAPA employees for their unwavering support during my deployment in response to Hurricane Laura," Schnyer said. "WAPA was also willing to provide material support to assist in this effort. This is a testament to the type of organization we are, the employees that work here and the community spirit we have."

Schnyer ultimately developed a report in collaboration with other ESF #12s for FEMA, describing the scope of the issues and the potential recommendations for repair, rebuild and re-energization for the JDEC Cameron Parish assets.

"I'm always amazed by how resilient and compassionate our citizens are to one another, despite the hardships they endure," Schnyer reflected. "Hardships often teach us invaluable lessons. For me, these experiences always serve as a reminder of how blessed I am."

Note: Wilson is an administrative analyst who works under the Cherokee Nation Strategic Programs contract. □



Repair work was complicated due to lingering effects of the storm, such as mud, which required heavy equipment to be pulled between locations.



Photograph taken before vegetation management work on the Terry Ranch-to-North Park 230-kilovolt lines in Northern Colorado.

Vegetation management protects lines

By Eric Barendsen

Photos by Daniel Borunda

The 2020 wildfire season, particularly in Arizona, California and Colorado, has been one of the worst in modern history. According to the National Interagency Fire Center, wildfires across the country have burned more than 13.5 million acres, destroyed more than 17,600 structures and cost about \$3.6 billion for fire suppression.



Photograph taken after vegetation management work on the Terry Ranch-to-North Park 230-kilovolt lines in Northern Colorado. In some locations, crews purposely left vegetation in environmentally sensitive areas such as wetlands, creeks and springs.

In Colorado, three of the state's worst wildfires on record have occurred in 2020. The Cameron Peak and East Troublesome fires threatened WAPA lines in and around Estes Park. The Mullen fire threatened the Ault-to-Craig transmission line, but thanks to outstanding firefighters and WAPA's vegetation management efforts completed only days before it approached, the Mullen fire did not damage the line.

WAPA managed to sidestep the devastation in California, having only one line trip during the Caldwell fire in July out of more than 4 million acres that have burned this year.

Being prepared

Across the West, facing one of the driest summers and autumns on record, firefighters were forced to contend with extremely dangerous conditions from July through October, protecting forests that were primed for wildfire.

Fortunately, WAPA anticipated the severity of the situation and had

prepared for it. Through foresight and diligent effort, WAPA completed a range of targeted vegetation management activities and related planning in 2020 that proved critical in managing the wildfire season.

Foremost this year has been WAPA's final push to complete an environmental impact statement, or EIS, that will decrease fuel-loading hazards and improve reliability.

Developed in coordination with the U.S. Forest Service, the EIS will formalize the partnership and clarify procedures to conduct mechanical vegetation management on WAPA rights of way on Forest Service lands. It will allow mechanical vegetation removal along 270 miles of transmission lines in Colorado, Nebraska and Utah.

"An environmental assessment is like investigative reporting," said Natural Resources Manager **ELynn Burkett**. "You're going in and you're finding all the facts."

The vegetation management EIS analyzes a range of environmental issues, such as wildlife habitat loca-

tions, and proposes actions designed to mitigate hazards to the lines such as falling trees due to age, lightning or wildfire within WAPA's rights of way.

The final EIS was published in August and the associated records of decision and special use permits—when issued in the coming months—will help provide adequate access for maintenance, ensure worker safety and manage wildfire risk.

Clearing the way

In a similar vein, Environment, Lands and Maintenance partnered over the last year to complete a special use permit that allowed crews to conduct significant vegetation management work this summer along the Ault-to-Craig and Terry Ranch-to-North Park transmission lines. WAPA completed the job right before the Mullen fire swept through.

"We knew coming into the summer that we needed to get this thing taken care of right away," said Environmental Protection Specialist **Scott Morey**.

continued on Page 6



Mechanical vegetation management uses a masticator that mulches forest material. Some operations use a picker to throw vegetation in front of the masticator. In steeper or rocky terrain, fellers with chainsaws walk through on foot and cut down trees the masticator can't get to.

With extreme drought and wind predicted by weather forecasters, WAPA needed to complete the work before the fire season truly got going.

"We get lightning storms that go through and hit those dry-as-popcorn areas, and it's just gone," Morey explained.

Morey came onto the project in late January and worked closely with Vegetation and Maintenance Fleet Program Manager **Daniel Borunda**. Their cross-functional team within WAPA included Lands Manager **Heidi Miller**, who led negotiations with the Forest Service regarding land-access issues.

On May 15, the Forest Service approved a special use permit to conduct the work along WAPA lines on Forest Service lands, giving crews the environmental green light to access overgrown areas.

Miller, Borunda and Morey met with Forest Service representatives in June and drove sections of the Ault-to-Craig line with them, identifying areas for vegetation removal. "We made sure they had all the answers they needed," Morey said. "It was a collaborative effort to make them comfortable with

what was going on out there on the ground."

Beginning July 20, WAPA crews cleared rights of way spanning roughly eight miles on Forest Service lands.

Gaining ground

Mechanical vegetation management involves two or three "fellers" with chainsaws going through the right of way and cutting down all the trees that could reach within roughly 20 feet of conductors. Then they use a masticator—a giant mobile woodchipper of sorts—which goes through the area and grinds everything into sawdust.

"For the first time in more than a decade, WAPA was able to remove vegetation in Colorado and Wyoming rights of way using mechanized means," said Borunda. "We are very fortunate to have completed the machine work when we did."

When the crews finished up on Sept. 21, the Mullen fire was already brewing to the north and was encroaching on Wyoming Highway 230 where it becomes Colorado State Highway 127 at the border of Colorado and Wyoming, southwest of Laramie.

James White, a Forest Service fire management officer for Arapaho and Roosevelt National Forests and Pawnee National Grassland, was integral in accepting WAPA's plan to remove vegetation from the east side of the Ault-to-Craig line.

"Although it took some time to have the field meetings, the office meetings, the back and forth over the spatial work, it was definitely significant collaboration between the two forests and the various specialists," White said. "A lot of that prework paid dividends in what I would say was a very smooth implementation phase."

Fire managers are feeling more urgency to conduct this type of work as wildfires become larger and more frequent. This year's effort was a benchmark that proved to be timely, he said.

According to White, the Mullen fire approached within three miles of WAPA's line—"easily within one day's reach," as he put it—and fire suppression managers were considering using it as a potential fire line location. Had the full force of the fire jumped the highway, they were looking at the newly treated corridor as optimal protection for the infrastructure.

Fortunately, firefighters conducted a successful burnout operation from the road that prevented aggressive southeast fire spread, he explained.

"I was super impressed by the quality of work done there on the lines," he said. "This project sets the stage for future conversations with other power providers and shows the importance and benefits of having good partnerships to have effective and ecologically sound work done, while still meeting the primary intent of infrastructure protection."

By the end of October, after much-needed snowfall and wintery temperatures hit the region, the Mullen fire was about 95% contained. Nonetheless, according to the incident management team, it will take sustained heavy snowfall this winter to completely extinguish all hot spots.

Mimicking nature

Although lacking the national attention of the Colorado and California wildfire seasons, Arizona has experienced significant wildfire activity this year with an estimated 850,000 acres

burned as of press time—worse than 2018 and 2019 combined.

Nineteen of those fires impacted WAPA facilities but inflicted minimal damage due in large part to Desert Southwest's best-in-class integrated vegetation management, or IVM, program.

DSW has been applying an IVM strategy for the past three years that not only targets removal of incompatible vegetation but also fuel ladders within WAPA's easements, explained Vegetation Management Specialist **Steve Narolski**.

"With wildfire being an integral part of most western U.S. ecosystems, the post-treatment rights of way allow a lower intensity wildfire to burn near or pass under WAPA assets and not impact the hardware or reliability," said Narolski. "This mimics natural processes within our rights of way in a gentler and less costly manner."

Continuing improvement

Going forward, the new environmental impact statement will give WAPA and the Forest Service the tools to continually refine their coordination

around vegetation management. One of the issues they will tackle is reducing the potential for "wicking" during forest fires. Wicking occurs when a narrow ravine or valley with vegetation conducts a wildfire from one side of a firebreak to the other.

WAPA funds can only be used to remove trees within minimum clearance distance requirements under the North American Electric Reliability Corporation standard, so the Forest Service plans to apply their own cutting and forest management practices to take care of those problem areas.

"The Forest Service wants to know where those are so they can have a management plan to go in and take care of those areas on their dime," Morey said.

Above all, this year has enhanced communication and collaboration across the two organizations, laying the groundwork for efficient vegetation management in the future.

"When we work together and we're good neighbors to each other, we can make good things happen," said Burkett. □

Note: Barendsen is a public affairs specialist.

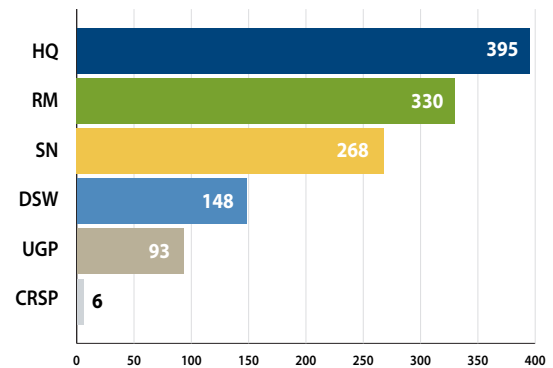
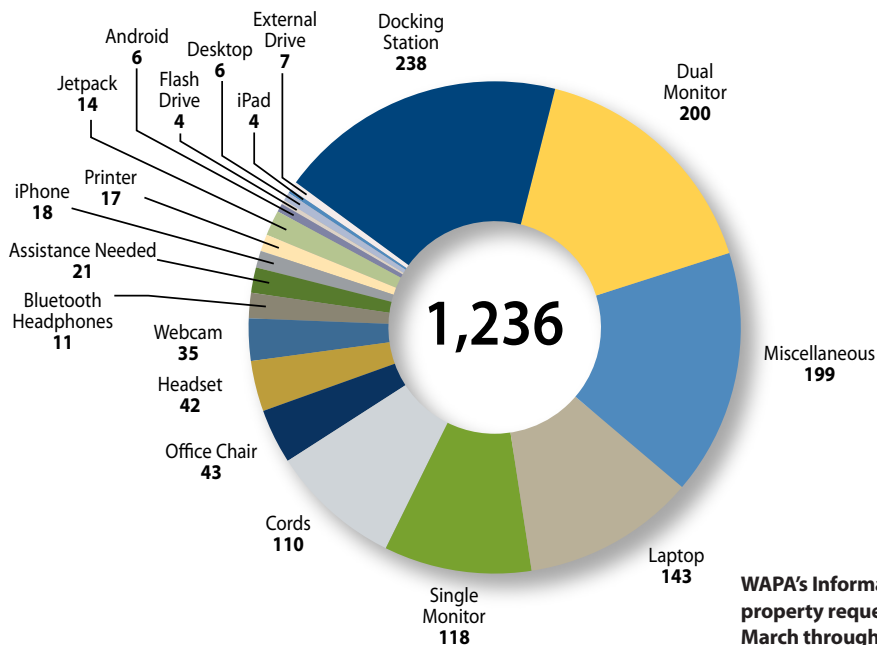


The Sears Fire north of Phoenix, Arizona, burned around 4.5 miles of WAPA right of way. No structure or conductor damage was identified, and no relay events occurred. (Photo by David Katich)

IT Service Portal celebrates one year

By Benjamin Nichols

W APA's Information Technology Service Portal celebrated its one-year anniversary Sept. 30, capping off a year marked with improvements to IT service delivery, including equipment checkout and mobile phone orders.



WAPA's Information Technology Property Request Dashboard shows approved property requests by type and region from the launch of the functionality in March through Nov. 16.

The IT Service Portal was launched to improve self-service for commonly requested IT products and services. The portal, accessible from a tile on the right side of the *myWAPA* homepage, combines a Google-like search engine, a knowledge base and an IT Service Catalog to empower WAPA employees to “shop” for services, including requests to borrow equipment such as monitors, headsets and webcams during the maximum telework posture.

In the year since the Service Portal's official launch, self-service requests have skyrocketed, with more than 7,000 unique exchanges.

“These requests represent a growing partnership between WAPA's employees and the IT community along with the promise of timely and effective service delivery,” said Vice President of IT for Infrastructure **Greg Hansen**.

“I definitely see a time where electronic requests through the IT Service Portal overtake phone calls or emails to WITCC,” said Senior Vice President and Chief Information Officer **Mike Montoya**.

Requests for service through the IT Service Catalog have steadily increased over the past year, reaching 2,294 requests in June—up more than 50% from the average of 1,440 per month during fiscal year 2020. During this period, more than 420 requests were made by WAPA employees to update contact information in the Outlook email and WAPA at Your Service platforms, reflecting the

maximum telework posture brought on by COVID-19.

The Service Portal was integral to WAPA's shift to increased telework in March when it was used to facilitate IT Property Requests that completely replaced hard-copy property passes across the regions and automated the tracking of IT devices so that employees could comfortably work from their homes.

“My number one priority in the early weeks of the pandemic was to get people the equipment and tools they needed—as easily as possible—so they could remain productive in their new settings,” said Montoya.

To date, 462 employees have catalogued more than 1,000 individual IT devices in the home environments including webcams, monitors and, most commonly, docking stations.

Requests for mobile devices such as phones, tablets and MiFis have seen improvements that reflect the benefits of automation through a self-service portal.

The “Request Mobile Device” Service Catalog item, which went live June 1, has since put more than 140 phones, tablets and hotspots into the hands of WAPA employees. Compared to the same period the year prior—using a process that had not yet been automated—IT has reduced delivery times by more than 40%, taking an average of 16 days from request to handoff, whereas previous timelines often exceeded 28 days.

“The new automation has improved communication,” said Supervisory

IT Specialist **Patti Pollock**. “Orders are being filled more accurately and quickly than before.”

“The vision for the IT Service Portal is for all requests for IT services, hardware and software to eventually be done here,” said Hansen. “Collecting all the information, approvals and directing the fulfillment of requests to the right person will reduce delivery times and continue to improve customer satisfaction.”

Several items are undergoing stakeholder review and slated to improve not only IT service delivery, but safety and security for WAPA employees as they request to enter facilities impacted by COVID-19 closures.

The mechanism won't completely deconflict people running into one another at WAPA facilities, but it makes engagements much more predictable. This simple step is an example of WAPA's core value to “Do what is right. Do what is safe.” □

Note: Nichols is an information technology specialist.



The Service Portal also contains how-to guides to help users navigate requests for products or services. Type questions into the search bar on the IT Service Portal or click Discover to browse the library. Instructions for the IT Service Portal and Service Catalog are available by searching for “WAYS standard.”



Wood pole structures: the backbones of WAPA

By Paul Robbins

Wood poles offer an excellent balance between structural capabilities and cost competitiveness related to installation and maintenance.

Wood pole structures are used widely by electric utilities with an estimated 130 million throughout North America. WAPA has around 68,000 of them, supporting thousands of miles of transmission lines. They are the backbones of the organization.

The Pacific Coast Douglas fir, western red cedar and southern yellow pine are the three primary types of wood used in poles throughout the United States. WAPA has some older western red cedar poles in service, however, for more than 40 years, Pacific Coast Douglas fir has been the most widely used type.

With several alternative materials available such as concrete, steel and fiberglass, why use wood? Because it offers an excellent balance between structural capabilities and cost competitiveness related to installation and maintenance.

Wood poles are cost effective because they are easier to install than other materials. They are directly embedded into the ground, usually 10% of the pole length plus two feet, and require no concrete or special

foundation design. They are also easier to maintain, climbable and more accessible in an emergency. Various lengths are stocked in WAPA warehouses, making them readily available for emergency rebuilds and Shoo-flies, which are temporary lines that bypass construction or other activities.

While WAPA uses single poles for some of its transmission lines, most are suspended by wood H-frame structures. Civil Engineer **Karen Rowe** says that the lateral strength obtained with two poles, crossarms and bracing is an important element of H-frame design.

"Being made of a renewable natural resource, the most interesting thing about wood H-frame structures is the inherent strength and durability they have," said Rowe. "The H-frame construction provides more lateral stability than single pole construction.

One of the poles in the H-frame may have damage or decay, however that does not mean the structure will fail."

To prevent decay, poles are generally treated with oil-borne pentachlorophenol, a preservative used for repelling fungal decay since the 1930s. Creosote and copper naphthenate preservatives are also used to treat WAPA's poles, crossarms and braces. Some treated structures have stood for more than 70 years.

Although treated structures can stand for decades, they are still vulnerable to decay, most starting at the groundline.

The groundline is literally the point at which the ground meets the pole. After being embedded in the ground, a pole is backfilled with soil, also called "native fill." The groundline is most vulnerable to decay because of several factors including moisture, oxygen, fungi, nitrogen, temperature and reduced preservative protection. Just like a dead tree stump in the back yard that sprouts mushrooms in spring, the wood pole is a food source for fungi and the groundline is the buffet.

Decay can affect poles in different ways.



Decay is visible on this wood pole after being pulled up above ground level.

"Some poles have a strong outside shell and a center more susceptible to internal decay or 'heart rot,'" said Rowe. "Others have a strong center and tend to decay externally, called 'shell rot.'"

Whether it is shell or heart rot, WAPA has programs that inspect poles for decay and provide treatment if needed.

Shell rot is identified in several ways, including visual inspection, scraping the surface of the pole or penetrating its shell with a dull probe. The purpose is to find signs of decay such as a soft, spongy surface; an underlying brittle,

crumbly texture; or even a musty smell due to water damage.

Finding heart rot uses more intensive inspection methods. Sounding, also called "hammer testing," involves striking a pole with a hammer and listening to the result. Healthy wood sounds solid and a hollow thud signals rot.

Another test involves incremental boring into wood, then pulling out a core that can be examined for rot. Groundline drilling is also conducted on older poles to identify decay at the groundline or below. The inspector gauges resistance on the drill bit as it goes in; less resistance indicates decay. Groundline drilling also emits bits of wood that are examined for rot.

In addition, there are forms of non-destructive evaluation testing that include X-ray evaluation and sonic testing that estimates fiber strength using sound waves.

Groundline decay can be a long, slow process and therefore can be delayed by regular inspection and maintenance activities. Shell rot is treated with a paste or wrap that contains fungi-killing agents and highly concentrated preservatives.

Sometimes damage is not as extreme and requires what is called a "pole bandage," which is applied to the damaged area for protection against further decay. On the inside,

heart rot creates a void within a pole that is treated with chemicals that impede decay and kill insects.

During application, a hole is bored into the area, chemical fumigant is injected into the space and the hole is plugged. Treatment can dramatically increase a pole's lifespan.

Since 1988, all new Douglas fir poles at WAPA are through-drilled prior to preservative treatment. During this process, a series of small holes are drilled into the pole above, below and at ground level so that there is 100% preservative penetration in the groundline zone to inhibit decay.

This process is so effective that during later inspections, no groundline drilling is required on newer through-drilled poles.

For more than 175 years, wood poles have stood the test of time because of their strength, stability, cost effectiveness and structural capabilities. □

Note: Robbins is a technical writer who works under the Cherokee Nation Strategic Programs contract.



Learn more by reading WAPA's Wood Structure Maintenance Guideline at [myWAPA, Departments, Maintenance, PSMM, Guidelines and Resources](#)

2020's final AEM spotlights accomplishments

On Oct. 27, the Office of the Administrator, Public Affairs and Information Technology came together to present the final All-Employee Meeting of the year.

As with the past few AEMs, the event was held and broadcast virtually, with employees from across WAPA's 15-state footprint participating remotely.

Electrical Engineer **Jackie Brusoe** served as emcee, speaking among other things about the Inclusion, Innovation and Technology Summit, which had the theme Innovation Takes Everyone in a Changing World and was then on the horizon.

Administrator and CEO **Mark A. Gabriel** spoke about the State of WAPA, discussing the importance of preventing the transmission of COVID-19, this year's historically active wildfire season and the support WAPA was able to offer during California's recent energy emergency.

Attendees also heard from Chief Strategy Officer **Jennifer Rodgers** about upcoming updates to the Tactical Action Plan, Information Technology Specialist **David Tucker** about data as a strategic asset and Management and Program Analyst **Stacey Decker** about redefining WAPA's mission and vision statements. Regional accomplishments were spotlighted at various points during the meeting.

The event was capped off with an employee Q&A facilitated by Chief of Staff **Melissa Ardis**. □



Look forward to coverage of the I2T Summit in an upcoming issue of *Closed Circuit*.



Read more about WAPA's support of California during its energy emergency in "Heating up the demand" in the October issue of *Closed Circuit*.

WAPA reports Q4 results

Administrator and CEO **Mark A. Gabriel** sent his quarterly memo to the Secretary of Energy outlining WAPA's fiscal year 2020 fourth-quarter performance. The following is a summary of that memo.

In FY 2020, WAPA continued its use of quantifiable performance measures and targets. This provides an opportunity for WAPA to gauge its improvement in key areas and identify where its attention and efforts can best be focused.

WAPA's Tactical Action Plan goals and enterprise indicators are designed to both align with Department of Energy strategy and drive strategic focus for the organization. They cascade through WAPA's performance management process, translating strategy into everyday action and creating a line of sight between employee efforts and overall direction.

WAPA monitors its performance and progress regularly, sharing the results on a quarterly basis. For FY 2020, WAPA reported six performance measures with a "green" status, meaning target met, and one performance measure with a "yellow" status, meaning target off track.

The complete breakdown is below. □

Enterprise Indicators of Organizational Performance

	Q1	Q2	Q3	EOY
• Mission Critical Customer Service – Control Performance Standard 1 (CPS1): Measures WAPA's reliability of the electrical grid by attaining a NERC CPS1 rating of equal to or greater than 100 percent for each balancing authority.	●	●	●	●
• Mission Critical Customer Service – Repayment of Investment: Measure WAPA's ability to meet legislated cost recovery requirements for timely repayment of Federal investment based on the latest available power repayment studies.	●	●	●	●
• Asset Management 2.0 – Annual O&M Cost per KWh Generated: Provide power at the lowest possible cost by keeping total operation and maintenance cost per kilowatt-hour generated at or below the National median for public power for entities with 100,000+ customers (\$0.056/KWh).	●	●	●	●
• Asset Management 2.0 – Reliability Centered Maintenance (RCM): Measures WAPA's ability to maintain an acceptable range that serves WAPA by placing special emphasis on conducting reliability centered maintenance over corrective/emergency maintenance.	●	●	●	●
• Asset Management 2.0 – Tier I Asset Data Use: Measures the extent at which WAPA emphasizes the use of AM data to support strategic and operational actions. Data focuses on Health Index (HI), Probability of Failure (POF), and Risk Scores. ¹	●	●	●	●
• Grid Resilience – Systems Availability (SCADA / EMS): Measures the extent at which significant systems, SCADA/EMS, are online and running as expected (includes underlying infrastructure, network computer systems, communication links, and storage devices).	●	●	●	●
• Grid Resilience – Cyber Security Response: Percent of cybersecurity threats resolved within 2 days of being identified by the QRADAR system/incident logs.	●	●	●	●
• Strategic Enabler Safety – OSHA Recordable Incident Rate (RIR): Measures the rate of WAPA-wide recordable illnesses and injuries per 100 full-time employees in a year. ²				0.6
• Strategic Enabler Safety – Days Away, Restricted, or Transferred: DART measures the WAPA-wide rate of occupational injuries that led to days away from work, job restriction, and job transfers during the year. ²				0.4

Tactical Action Plan Accomplishments / Highlights

Mission Critical Customer Services in an Evolving Industry

- Reliability Coordinator transition to the Southwest Power Pool completed.
- Desert Southwest Region's Energy Imbalance study substantially complete.

Grid Resilience

- Deployed cybersecurity sensors in Sierra Nevada and Rocky Mountain Regions to support the DOE Cybersecurity for the Operational Environment project.
- Identified and trained core staff in emergency management; actively responding to the COVID-19 pandemic.
- Delivered the Fiber Feasibility Assessment to DOE; completed Phase two of WAPA's Fiber Pilot Options Study.

Asset Management 2.0

- Improved data quality and reporting on major assets (transformers, transmission lines and breakers).
- Added four new asset classes to the asset management catalog.
- Began reporting on an additional four asset classes.
- Developed the Data as a Strategic Asset Roadmap and acquired new tools for data and analysis support.

People and Organization

- Championed and trained more staff in Human Performance / Just Culture.
- Launched WAPA's new, comprehensive Leadership Development Program.
- Launched Workload Management, beginning efforts to use data to better understand workforce capacity.
- Added Budget system enhancements to improve financial reporting.
- Launched Category Management Teams in Information Technology, Construction, Commodities and Services and explored opportunities to improve strategic sourcing.
- Implemented an updated WAPA Acquisition Procedures Guide to support continued compliance and efficient and effective procurement operations.

¹ Annual reporting frequency.

² Contextual indicator; monitoring without target.

Strategic Target Areas and Key Performance Measures

Q1 Q2 Q3 EOY

Mission-Critical Customer Services

• Customer Outreach: Measures WAPA's ability to connect with each customer in a manner that facilitates an improved relationship.	●	●	●	●
• Accountable Outages¹: Unplanned outages are an indicator of reliability, a critical service WAPA provides to its customers. This measures frequency of outages in terms of the number of standard deviations from the historical norm. ²	-0.89	-0.07	-0.07	-0.35
• Control Performance Standard 1 (CPS1): Measures WAPA's reliability of the electrical grid by attaining a NERC CPS1 rating of equal to or greater than 100 percent for each balancing authority.	●	●	●	●
• Repayment of Investment: Measures WAPA's ability to meet legislated cost recovery requirements for timely repayment of Federal investment based on the latest available power repayment studies. ³	●	●	●	●

Asset Management 2.0

• New Asset Analysis: Measures the percent of new assets captured (i.e. having a recorded Health Index and Consequence Score) in the asset management program.	●	●	●	●
• Breakers < 100 kV	●	●	●	●
• Cranes	●	●	●	●
• Transformer Bushings	●	●	●	●
• Load Tap Changers	●	●	●	●
• Data Quality Confidence Index: Measures WAPA's ability to use asset management information effectively in the planning and day-to-day maintenance activities. ²	●	●	●	●
• Tier I Asset Data Use: Measures the extent at which WAPA emphasizes the use of AM data (i.e. Health Index, Probability of Failure and Risk Scores) to support strategic and operational actions. ³	●	●	●	●
• Reliability Centered Maintenance (RCM): Measures WAPA's ability to maintain an acceptable range of reliability centered maintenance (a.k.a preventative maintenance).	●	●	●	●
• Reserve Strategy Execution: Measures WAPA's ability to manage and execute budget with alignment to Unobligated Balance Strategy targets for the current fiscal year-end.	●	●	●	●
• Annual O&M Cost per KWh Generated: Provide power at the lowest possible cost by keeping total operation and maintenance cost per kilowatt-hour generated at or below the National median for public power for entities with 100,000+ customers (\$0.056/KWh).	●	●	●	●

Grid Resilience

• Physical Security Remediation: Measures the ability to execute according to plans with regards to physical security remediation per site risk assessments.	●	●	●	●
• Emergency Management Readiness: Measures the ability to implement and track to three major areas: training, compliance and performance assurance, to reach a desired end-state for the program.	●	●	●	●
• Cyber Security Response: Measure's WAPA's ability to timely address cyber security incidents. Percent of cybersecurity threats resolved within 2 days of being identified by the QRADAR system/incident logs.	●	●	●	●
• Systems Availability (GSS Network): Measures the extent at which the GSS Network is online and running as expected.	●	●	●	●
• Systems Availability (SCADA / EMS): Measures the extent at which significant systems, SCADA/EMS, are online and running as expected (includes underlying infrastructure, network computer systems, communication links, and storage devices).	●	●	●	●

People and Organization

• High-Performer Turnover Rate¹: Measures WAPA's ability to retain high-performing talent and create an "Employer of Choice" identity. Annualized.	2.4%	2.6%	3.5%	3.3%
• Acquisition Cost Savings: Measures WAPA's ability to save dollars by identifying cost savings opportunities (e.g. bulk purchase orders, consolidated purchasing actions).	●	●	●	●
• FEVS Inclusion Index¹: Measures the degree to which our employees feel WAPA has an inclusive workplace. ⁴				N/A
• FEVS Engagement Index¹: Measures the degree to which our employees feel engaged in the workplace. ⁴				N/A
• FEVS Innovation Index¹: Measures WAPA's ability to build-up and support a culture of employee innovation. ⁴				N/A

Strategic Enabler – Safety

• OSHA Recordable Incident Rate (RIR)¹: Measures the rate of WAPA-wide recordable illnesses and injuries per 100 full-time employees in a year. ²	0.6	0.7	0.7	0.6
• OSHA Days Away, Restricted, or Transferred¹: DART measures the WAPA-wide rate of occupational injuries that led to days away from work, job restriction, and job transfers during the year. ²	0.3	0.6	0.6	0.4

¹ Contextual indicator; monitoring without target.

² Measure retiring after FY 2020.

³ Annual measure; no quarterly updates.

⁴ Annual measure; no quarterly updates; the Office of Personnel Management delayed the administration of the Federal Employee Viewpoint Survey in response to COVID-19. The survey results were not received by the FY 2020 annual reporting date.



stories of 2020

By Philip Reed

This year was like no other, I'm sure we can all agree. Looking back at it to choose only 10 stories to spotlight is even more difficult than usual.

Closed Circuit covered a wide range of topics in 2020, with WAPA's many accomplishments, innovations, programs and initiatives taking the spotlight at various points. This was also the first year in which *Closed Circuit* was distributed to customers, and I hope they have enjoyed our coverage.

If you don't see your favorites, that's okay; there isn't enough room in a top 10 for all of the best articles. Many of my favorites are missing, too!

As editor, I do hope that you enjoy this look back at the year that was. See you in January.

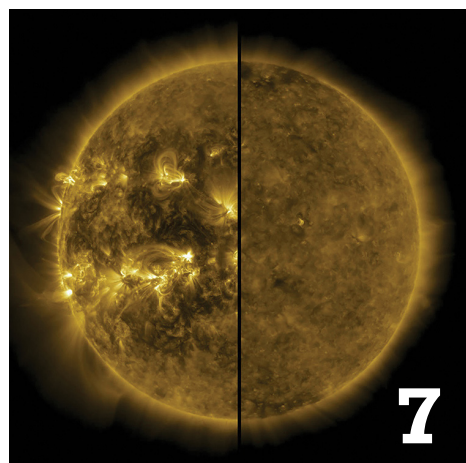


10 Students get hands-on experience at EPTC – April

Early this year—pre-COVID, of course—a group of around 20 ninth-grade students from John F. Kennedy High School in Denver, Colorado, visited the Electric Power Training Center. They toured the facility, attended lectures and even simulated the management of events on the EPTC's Miniature Power System.

9 Transition to new RCs complete – February

After more than one year of preparation and testing, WAPA successfully completed its transition to new reliability coordinators for its balancing authorities and transmission operators in the Western Interconnection. It was a complex WAPA-wide change, involving around 140 employees from all across the organization.

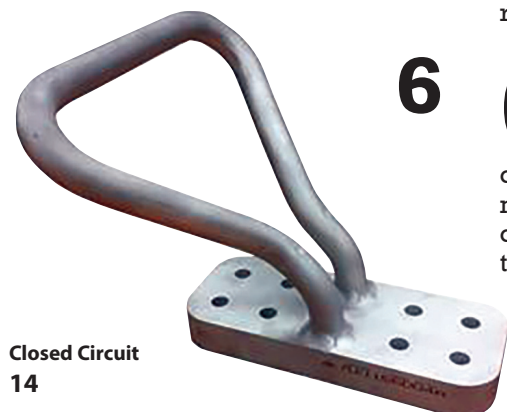


8 Vegetation Management benefits Navajo – November

In a year as active as 2020 has been in terms of wildfires, the benefits of Integrated Vegetation Management cannot be overstated. In July, Desert Southwest crews performed IVM along the Navajo-to-Long House Valley 230-kilovolt transmission line in Arizona. They worked with the Navajo Government to coordinate the work, which even generated firewood for the community.

7 New capability shields grid from solar storms – November

Did you know space weather can impact the electrical transmission system on Earth? WAPA recognizes this potential risk to its transmission assets and customers, and has partnered with the Electric Power Research Institute's SUNBURST program to develop ways to protect the grid and remain resilient in the face of an unpredictable sun.



6 Grounding stirrup solves multiple issues – January

When designing a solution to one issue regarding ground cables at substations, Electrical Engineer **Gary Zevenbergen** ended up solving a different, related problem as well. What was originally an engineering improvement ended up also being an ergonomic one, with a new grounding stirrup design both keeping cables at an appropriate distance and making them easier to install.

5 SCADA vendor project reaches milestone – September

WAPA had three separate supervisory control and data acquisition and energy management systems, each with a primary and backup control center for a total of six control centers. They each evolved independently, with different hardware, software and maintenance agreements. In June, WAPA selected a single vendor, allowing the systems to be standardized for greater redundancy.

4 WAPA rescues synchrophasor data – May

In late 2019, Peak Reliability Coordinator closed its doors for good. One of many considerations involved what would become of its synchrophasor data, which may have captured power-system events that could be helpful to study. On a very tight timeline, WAPA coordinated with Pacific Northwest National Laboratory to get the valuable data copied and archived before it was lost forever.

3 WAPA-hosted event team wins Science Bowl – August

Each year WAPA sponsors a number of regional Science Bowl events. The winners move on to the National Science Bowl in Washington, D.C., where they compete with other teams from across the country. This year's big event was instead held virtually, but Preston Middle School—winner of the WAPA-hosted Colorado Regional Middle School Science Bowl—emerged victorious.

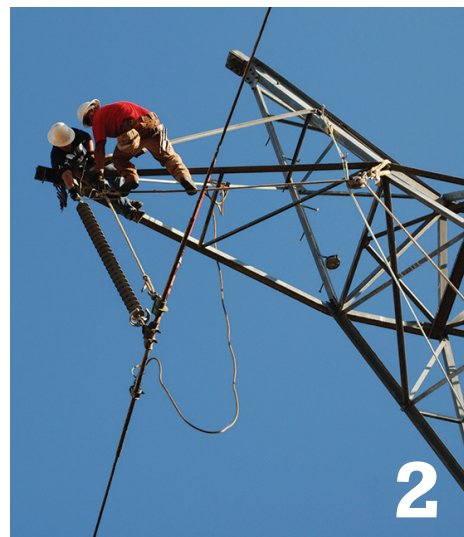


2 Reflecting on rolling it back – June

Vice President of Transmission System Asset Management for Sierra Nevada **Will Schnyer** discusses the phrase “we roll it back,” commonly used after an incident or accident has occurred. In doing so, he reflects on what he has witnessed in the field, as well as the advice he shares with his employees and his son.

1 Heating up the demand – October

The California Independent System Operator had predicted a potential capacity shortfall by 2020, the cumulative result of powerplant retirements and increased renewables. In August, that prediction became a reality. WAPA leapt to action, and the organization's timely intervention helped alleviate the capacity shortfall. Situations like these truly demonstrate the value of hydropower.



Stay safe from carbon monoxide

By Paul Robbins

A

s the weather gets colder, we all like to keep our homes warm. Doors and windows are shut tight and the furnace is on. You could have a space heater running in the back office or a log burning in the fireplace.

Whatever you do to stay warm, don't forget about the hazards of carbon monoxide, also known as CO. It is an odorless, colorless gas that is responsible for more than 400 deaths, 20,000 emergency room visits and 4,000 hospitalizations nationwide every year.

CO is produced by a variety of fuel-burning sources such as vehicles, gas ranges, fireplaces, furnaces, generators, grills, lanterns and portable gas heaters. It is difficult to detect and can build up indoors, unknowingly poisoning those who breathe it.

Know the risks and symptoms

Infants and the elderly are more at risk, however anyone can fall victim to CO poisoning. This is especially true if they have breathing problems, anemia or chronic heart disease. Many are caught off guard while sleeping before they feel any symptoms.

Sometimes low to moderate symptoms of CO poisoning can be mistaken for the flu because signs include fatigue, headache, dizziness, nausea and shortness of breath. High levels of CO poisoning can cause vomiting, confusion, loss of muscular coordination, unconsciousness and death.

It is important to note that there are different levels of exposure that can be caused by various sources.

Know the hazards at home

Sometimes small leaks develop in home heating systems if pipes or joints are not fitted tightly or properly. These leaks can cause low levels of exposure to CO. Horizontal ventilation pipes should be angled up slightly to direct exhaust gases toward the outdoors and limit potential leaks from improperly fitted pipes and joints.

If you use a fireplace or wood stove, have the chimney cleaned or checked annually. Over time, debris accumulates and this blockage can lead to CO buildup.

Place carbon monoxide detectors near bedrooms and change their batteries twice every year. Gas appliances, heating systems and water heaters should be ventilated properly and serviced annually by a qualified technician.

Do not idle vehicles in the garage, use generators inside your home or heat your home with gas ovens or portable gas heaters.

As cold as it might be outside, never cook on a charcoal grill in the garage.

Act quickly!

If you experience symptoms of CO poisoning or your carbon monoxide detector goes off, do not investigate the gas source. Get outside immediately, call 911, make sure everyone is accounted for and do not reenter the premises.

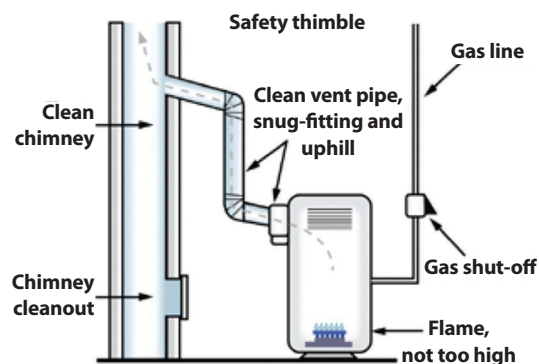
While keeping warm this winter, stay safe and remember to protect yourself and others from CO poisoning. □

Note: Robbins is a technical writer who works under the Cherokee Nation Strategic Programs contract.



Fire departments urge residents to change the batteries in their smoke alarms and carbon monoxide detectors twice a year during daylight saving time. If you forgot to do it last month, take a few minutes to change them today.

Here's the safe way to connect heating equipment to the chimney



To learn more about carbon monoxide, visit [cdc.gov/co/faqs.htm](https://www.cdc.gov/co/faqs.htm)

Brief Transmissions

FY 2020 annual report available

WAPA's fiscal year 2020 Annual Report, "Engaging in a World of Change," is now available.

The report focuses on just a few of WAPA's many accomplishments in FY 2020 and how they represent WAPA's engagement in a world of change.

The stories are separated into chapters that define how the organization has demonstrated stability and progress in these unprecedented times.



Read the full report at wapa.gov, *The Source*, Annual Reports



Happy winter holidays!

The *Closed Circuit* team wishes you and yours a happy and safe winter holiday season.

We appreciate your readership and your support in making our magazine as great as it can be, and we look forward to bringing you more exciting content in the new year.



WAPA announces new CAO

On Nov. 12, WAPA announced **Jennifer Rodgers** as the organization's new chief administrative officer, pending approval from the Office of Personnel Management.

As CAO, Rodgers will be responsible for WAPA's internal administrative operations and managing administrative programs critical to WAPA's mission.

A number of offices are managed under the CAO, including Natural Resources, Procurement, Records Management, HQ Facilities, Leadership Development, Inventory and Fleet Management, the Transmission Infrastructure Program and the Office of Economic Impact and Diversity. Additionally, the CAO is WAPA's primary liaison with the Power Marketing Administration Human Resources Shared Service Center.

Rodgers joined WAPA in 2013, and she built the organization's Continuous Process Improvement program one year later. In 2017, she was selected as chief strategy officer. She holds a bachelor's degree from Colorado State University and a Master of Business Administration from the University of Colorado at Colorado Springs.

"Jennifer has proven herself time and again to be an invaluable resource to WAPA, its customers and its employees," said Administrator and CEO **Mark A. Gabriel** in his announcement. "I look forward to working with her in her new capacity."



Closed Circuit wants you

The 2021 *Closed Circuit* publication calendar is now available. Copy deadlines are always the 15th of each month. Please make a note of them so that you can ensure your news and announcements make it into the appropriate issue.

As always, *Closed Circuit* encourages participation from all levels across WAPA. If you are interested in writing for the magazine, pitching story ideas or providing other content, get in touch with Public Affairs Specialist **Philip Reed** at reed@wapa.gov

Closed Circuit is looking forward to having you!

Month	Copy Due	Published
January	12/15/20	1/15/21
February	1/15/21	2/15/21
March	2/15/21	3/15/21
April	3/15/21	4/15/21
May	4/15/21	5/15/21
June	5/15/21	6/15/21
July	6/15/21	7/15/21
August	7/15/21	8/15/21
September	8/15/21	9/15/21
October	9/15/21	10/15/21
November	10/15/21	11/15/21
December	11/15/21	12/15/21